
Head and Neck Tumor Seeding at the Percutaneous Endoscopic Gastrostomy Site: A Review of the Literature and Case Report

Introduction

Head and neck cancer patients often require alternative means of nutrition support due to obstructing tumors of the neck, esophagus and thyroid as well as dysphagia related to disease or radiation therapy. Before the development of PEG tubes, patients underwent open gastrostomy tube placement for long-term nutrition support.

Today, most PEG tubes are placed during a complete esophagogastro-duodenoscopy (EGD). If short-term nutrition support — defined as four to six weeks — is planned, a nasogastric (NG) tube may be used.

Commonly Used PEG Placement Techniques

Gauderer-Ponsky “Pull”

Developed in 1980. The stomach is filled with air, which pushes the stomach wall up toward the abdominal wall. A light is used to view the proliferating area. The endoscope is inserted. The guide wire is placed in the PEG site. If an area is noted to be abnormal, a biopsy is performed. After the guide wire is inserted, the incision site is closed.

Sachs-Vine “Pull”

Developed in 1983. The PEG is a long, semi-rigid, tapered tube with a dilator attached to the proximal end. During the EGD, the dilator is inserted into a guide wire and advanced into the mouth, down the esophagus and stomach, and pulled out the abdominal incision. This method usually requires two passages of the PEG through the oral cavity and one passage of the PEG through the oral cavity.

Russell “Introducer”

Developed in 1984. The introducer is placed through the abdominal wall into the stomach. The 14-French balloon catheter is inserted into the stomach. The balloon is inflated and pulled out of the stomach, creating an incision site that is large enough for the tube to be inserted.

Brown-Muller T-Fastener

This method is a modification of the Russell “Introducer.” This is a tube-like introducer that is inserted through the abdominal wall and into the stomach. The incision site is closed with stitches. After the introducer is placed, the stomach is inflated and the tube is inserted.

Facts About Tumor Seeding at the PEG Site

Believed to occur due to multiple or traumatic passes through the oral cavity of the instruments or the PEG itself.

Found in patients with stage II–IV head and neck cancers within 1–10 months following PEG placement.

Associated with poor prognosis, with mean survival rate of approximately 3–4 months after diagnosis.

Not commonly considered as the onset of symptoms often mimics local infection with redness, induration, pain and drainage.

Symptoms resolve temporarily with antibiotic therapy.

Case Report

A 68-year-old male who had T2N0M0 squamous cell carcinoma of the hypopharynx was referred to a large national home enteral provider for EN therapy. The patient underwent PEG placement for EN in November 2009. Unfortunately, the method of PEG placement was not noted. On February 23, 2010, the patient reported that the PEG site was red, blistered, and painful, adding that he had been treated for local infection twice since PEG placement. He was advised to contact his physician for biopsy of the site. On March 2, 2010, the patient reported that he had not used his feeding tube for nearly 1 week, was able to maintain weight with an oral diet, and was scheduled to have his PEG removed. However, he added that the PEG site remained red and raw, with granulating tissue that was bleeding. After the PEG was removed, the patient reported to the dietitian that the PEG site was beginning to heal and that the breakdown was responding to antacid liquid applied to the skin for what was diagnosed as an ulcer at the PEG site. The patient was discharged from the home enteral provider in March 2010.

The patient suffered a recurrence of hypopharyngeal cancer and underwent a total laryngopharyngectomy and right neck dissection on June 9, 2010. The previous PEG site was biopsied intraoperatively, and results confirmed metastatic carcinoma consistent with hypopharyngeal cancer. The abdominal wall contained a large mass extending from the skin surface down through the wall of the stomach. The patient required a subtotal gastrectomy with sleeve reconstruction of the abdominal wall, and a nasoesophageal punction was performed for enteral feedings. In March of 2011, the patient died from complications related to his metastatic carcinoma.

Conclusion

Clinicians working with head and neck cancer patients should be aware of all potential complications of PEG placement, including the unique complications of tumor seeding, in order to provide early intervention. Evaluation of the PEG site should be conducted if persistent or recurring redness or induration, skin breakdown, bleeding, or unusual changes are noted to the skin or stoma site, and tumor seeding should be a serious consideration in these rare cases.

Other Theories of Tumor Implantation

Hematogenous and lymphatic spread. According to this theory, surgical stress increases tumor metastasis due to high concentrations of circulating cortisol, which can induce morphologic changes in the capillary lumen. This allows tumor cells to implant in the site of incision due to increased circulation to the incision and the nutrient-rich environment of the healing site.

Active tumor cell dislodging into the gastrointestinal tract. It is believed that as tumor cells turn over and slough from the primary site, the cells are swallowed. Following PEG placement, these slough cells adhere to the stomach wall at the PEG incision site, which is a nutrient-dense environment that nourishes the cells and promotes further cell growth.

Reported Cases of Tumor Seeding

Mitchell reported a case of a 39-year-old male who had stage IV squamous cell carcinoma of the right soft palate, tonsillar fossa, retromolar trigone, and base of the tongue. One month after PEG placement, granulation tissue was forming. Within 3 months, the patient had a 4-cm fungating mass around the PEG site. Three weeks later, the mass had grown to 10 cm in diameter. A skin biopsy revealed squamous cell carcinoma that originated from the patient’s head and neck cancer. An EGD demonstrated tumor growth around the bumper and mushroom in the stomach, and a computed tomography scan revealed a large mass extending through the abdominal wall.

Sinclair et al reported a case of a 61-year-old male with stage IV squamous cell carcinoma on the right side of the tongue. PEG was placed using the “Pull” method. Approximately 5 days after PEG placement, the patient reported mild tenderness and erythema near the PEG site. The patient was treated with oral antibiotics for presumed cellulitis, with resolution of symptoms. The PEG was removed 4 months later, but the patient noted concern at the PEG site. The site later became erythematous, raised, and indurated. The patient was treated with another week of oral antibiotics for presumed cellulitis. When no improvement was seen 6 weeks later, the site was biopsied. The biopsy was positive for squamous cell carcinoma similar to the head and neck cancer. An EGD revealed a 6-cm fungating mass along the anterior wall of the stomach. The patient underwent surgical resection of the tumor and subtotal gastrectomy, local radiation and chemotherapy. Nine weeks following surgery, biopsy results of an excised left sublingual lymph node were positive for squamous cell carcinoma.